(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 192 281**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **86200021.3**

(51) Int. Cl.⁴: **B 23 B 27/04**

(22) Date of filing: **08.01.86**

(30) Priority: **11.01.85 NL 8500067**

(43) Date of publication of application:
27.08.86 Bulletin 86/35

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

(71) Applicant: **KOMEETSTAAL HOLDING B.V.**
Industriestraat 1
NL-7005 AN Doetinchem(NL)

(72) Inventor: **Smolders, Cornelis**
Collenkamp 18
NL-6903 VP Zevenaar(NL)

(74) Representative: **Klijberg, Josephus B.J. et al,**
Nederlandsch Octrooibureau Johan de Wittlaan 15
P.O. Box 29720 NL-2502 LS 's-Gravenhage(NL)

(54) Grooving tool.

(57) Tool post with tool (9) for metal cutting work of a hollow space, said tool (9) being clamped between a support (3) and a clamp (12) with the support (3) attached to a carrier (1), the support (3) over its entire length as well as the clamp (12) being curved, said curvature (6,22) having a centre line parallel to the longitudinal axis of the tool (9) in a plane through the cutting edge (8) of the tool (9) and inside the cutting circle of the tool, preferably carrier (1) and support (3) being designed such that support (3) and clamp (12) can be placed on either side of the carrier (1).

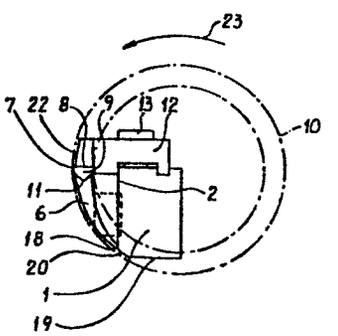


fig-3

EP 0 192 281 A1

0192281

Tool post with tool

The invention relates to a tool post with tool for metal-cutting work, comprising a carrier, a bottom support for the tool and a clamp which grips the top of the tool and is fastened detachably to the carrier, and a tool which can be clamped between the support and the clamp in a position precisely determined by a stop, said tool at the cutting edge projecting laterally beyond the support, and said support having over a length which is at least equal to the length of the tool a curved outside face in a curve whose centre line is parallel to the longitudinal axis of the tool and lies in a plane through the cutting edge.

Such a tool post with tool is known from European Patent Application 83201645.5 which has been laid open for inspection, in particular from Figs. 7 to 9. In the case of this known tool post with tool the curve of the support relative to the carrier is outwards. This means that during insertion for the making of a cylindrical cavity or a circular groove one can never go deeper than the distance which is determined by the distance between the cutting edge and the nearest front face of the carrier or the clamp not belonging to that part of the clamp which grips the tool itself. If this distance is increased by increasing the length of the curved part of the support and the part of the clamp above it, which may also be curved, the stability of clamping of the tool is reduced, due to the fact that the parts of the support and the clamp gripping the tool have to be relatively thin, in general thinner than the width of the cutting edge of the tool.

The object of the invention is to produce in a simple manner a solution which makes it possible to increase the insertion depth while retaining a secure clamping.

This object is achieved according to the invention in that the curve extends over the entire length of the support and faces the carrier, and the clamp has a side face which forms a continuation of the outside face of the curve of the support. Since the curve faces inwards, and both the clamp and the support are curved over their entire length, insertion is possible without conflict with the front face, and therefore over a greater depth than previously.

The side face of the carrier following the support preferably lies in a vertical plane through or inwards of the bottom edge of the curved outside face of the support with the under side of the carrier within the continuation of the curve of the outside face of the support. This means that the carrier also does not have parts which could come into conflict with the workpiece, so that insertion can also take place over a part of the length of the carrier.

From Patent Application 8,204,473 it is known to fasten the support against a side face of the carrier and to fix the clamp on the top face of the carrier. With the use of the inward-facing curve according to the invention, this already results in lateral placing of the curved outside faces of support and clamp, in such a way relative to the adjacent side face of the carrier that, if this also satisfies the condition that the under side of the carrier comes within the continuation of the curve of the outside faces of support or clamp, the insertion can take place in a simple manner to a greater depth than the axial length of support or clamp. According to the invention, it is now advantageous for the carrier to be designed in such a way that the support can be attached both against the left and against the right side, and

both the support and the clamp for placing left of the carrier have a curvature of their respective side faces which is the reverse of the curvature of these side faces of the support and clamp intended for placing to the right of the carrier. With one carrier and two sets of clamp and support belonging together, it is now possible to machine with the same tool both during rotation of the workpiece clockwise and during rotation anticlockwise.

The invention will now be explained in greater detail with reference to the drawings.

Fig. 1 shows a side view of a tool holder with tool according to the invention.

Fig. 2 is a top view of Fig. 1, and

Fig. 3 is a front view of Fig. 1.

Fig. 4 shows the application of the invention on changing of the direction of rotation, with carrier, support and clamp, in a front view.

The figure shows a carrier 1, against the right side of which - which is indicated by 2, and which forms the right side when one looks in the direction of the tool - a support 3 is fastened with bolts 4 and 5, said support having a curved outside face 6, which is located on the inside of the outside edge 7 of the cutting-edge 8 of the tool 9 and thus falls within the circle 10 which is described by the outside edge 7. This curved part 6 has a V-shaped support 11 for the tool 9, of the type known per se from Patent Application 8,204,473. This tool 9 is clamped in the V-shaped groove 11 by means of a clamp 12, which is clamped with the bolt 13 on the top face 14 of the carrier 1 with the rear side 15 of the clamp 12 lying against the stop side 16 of the

carrier. This clamp 12 has a nose 17 with inverted V-shaped groove which grips the tool 9 in the manner known from Patent Application 8,204,473.

The side face 2 of the carrier 1, against which the support is fastened lies in a vertical plane which goes through the bottom edge 18 of the support 6.

The under side 19 of the carrier 1 is bevelled at 20, so that the carrier has not a single part which projects outside the circle 10, but always comes within it.

It can be seen clearly from looking at Figs. 2 and 3 that on insertion the front face 21 no longer limits the insertion depth, as is the case with the known tool holder, but that insertion is possible over a great length which extends axially past the axial length of clamp and support.

For this, it is, of course, necessary that the side face 22 of the clamp 12 has a curve which is a continuation of the curve of the outside face 6 of the support.

Fig. 4 shows that on rotation of the workpiece clockwise, as indicated by the arrow 23, in contrast to rotation anticlockwise, as shown in Fig. 3, the same working can be carried out with one and the same carrier 1, in which the support 6' is fastened against the opposite side face 2' of the carrier 1 in the same way as shown in the other figures with the curve the opposite way, while the clamp is also designed in reverse.

CLAIMS

1. Tool post with tool (9) for metal-cutting work, comprising a carrier (1), a bottom support (3) for the tool and a clamp (12) which grips the top of the tool and is fastened detachably to the carrier, and a tool which can be clamped between the support and the clamp in a position precisely determined by a stop, said tool at the cutting edge (8) projecting laterally beyond the support (13), and said support (3) having over a length which is at least equal to the length of the tool a curved outside face in a curve whose centre line is parallel to the longitudinal axis of the tool and lies in a plane through the cutting edge, characterized in that, the curve (6) extends over the entire length of the support (12) and faces the carrier (1), and the clamp (12) has a side face (22) which forms a continuation of the outside face of the curve (6) of the support (3).

2. Tool post with tool according to claim 1, characterized in that the side face of the carrier following the support preferably lies in a vertical plane through or inwards of the bottom edge (18) of the curved outside face (6) of the support (3) with the underside (19,20) of the carrier inside the continuation of the curve of the outside face (6) of the support (3).

3. Tool post with tool according to claim 1 or 2 where the support is fixed against a side face of the carrier and the clamp is fixed against the top face of the carrier, characterized in that the carrier (1) is designed in such a way that the support (13) can be attached both against the left and against the right side and both the support and the clamp for placing left of the carrier have a curvature of their respective side faces which is the reverse of the curvature of these side faces of the support and clamp intended for placing to the right of the carrier.

0192281

fig-1

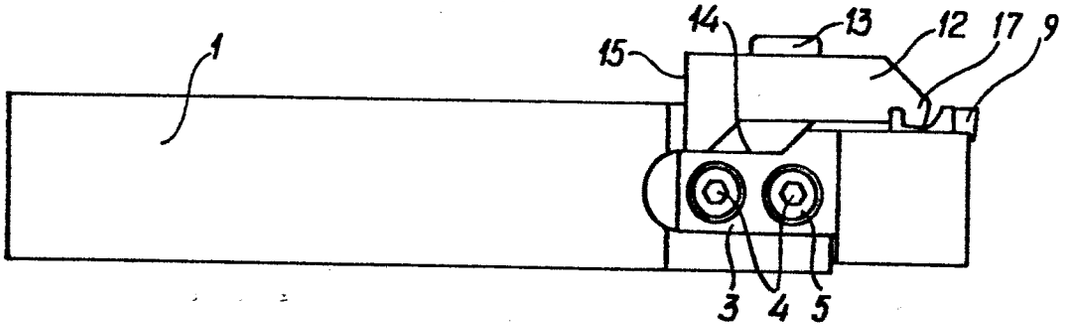
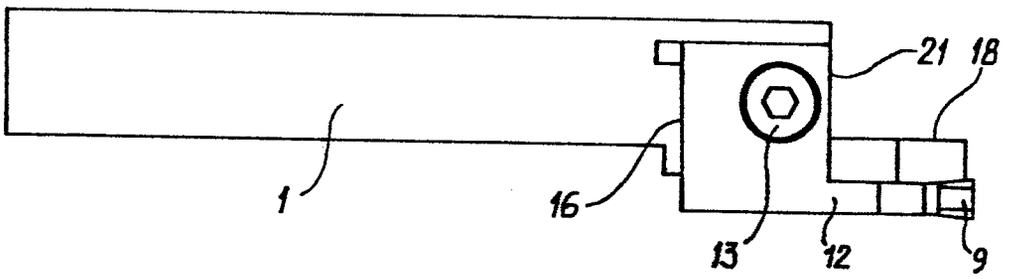


fig-2



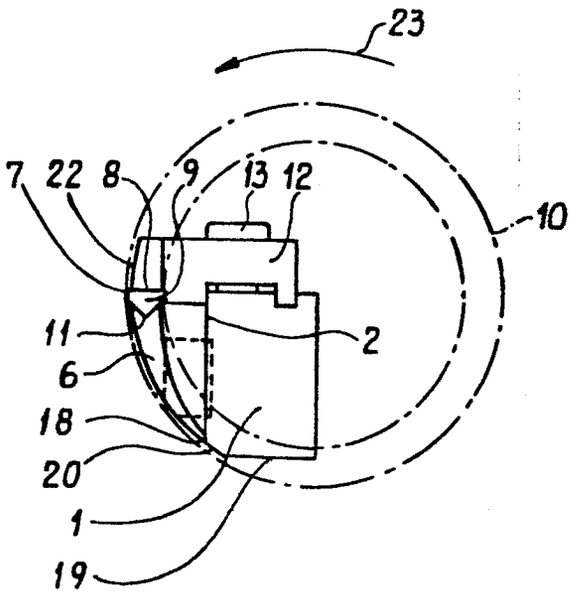
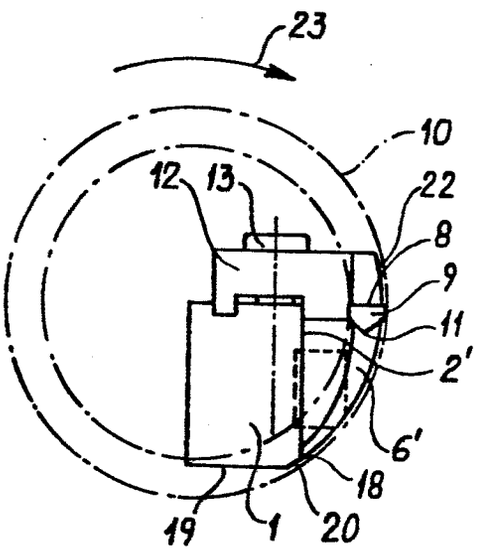


fig-3

fig-4



European Patent Office

EUROPEAN SEARCH REPORT

0192281
Application number

EP 86 20 0021

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US-A-4 332 513 (GOWANLOCK) * Figures 1,4 *	1	B 23 B 27/04
A	DE-A-3 204 693 (ARNOLD)		
A	FR-A-2 394 351 (ESTRA)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 23 B 27/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	03-04-1986	BOGAERT F.L.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503 03.82